Volunteer Lake Assessment Program Individual Lake Reports

ANGLE POND, SANDOWN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,511	**Max. Depth (m):**	11.6	**Flushing Rate (yr^{-1})**	1.5
Surface Area (Ac.):	150	**Mean Depth (m):**	3	**P Retention Coef:**	0.68
Shore Length (m):	4,000	**Volume (m^3):**	1,924,500	**Elevation (ft):**	220

TROPHIC CLASSIFICATION

Year	Trophic class
1984	EUTROPHIC
2002	MESOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

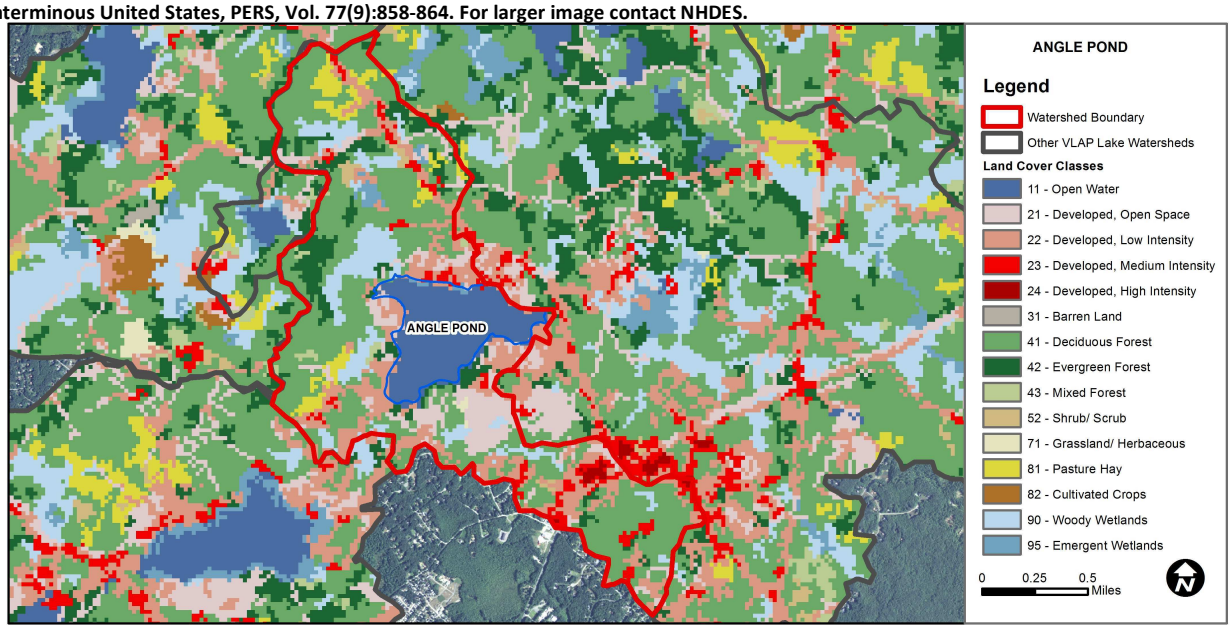
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	No Data	No Data for this parameter.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

ANGLE POND - ANGLE POND GROVE BEACH	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	11.9	Barren Land	0	Grassland/Herbaceous	0.17
Developed-Open Space	8.55	Deciduous Forest	38.36	Pasture Hay	3.27
Developed-Low Intensity	15.6	Evergreen Forest	7.11	Cultivated Crops	0
Developed-Medium Intensity	4.03	Mixed Forest	0.64	Woody Wetlands	7.93
Developed-High Intensity	0.45	Shrub-Scrub	0.75	Emergent Wetlands	0.86

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
ANGLE POND, HAMPSTEAD, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were greatly elevated in June and indicative of an algal bloom, and then decreased to lower levels in July and August. Visual inspection of historical data indicates relatively stable chlorophyll.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride were elevated and much greater than the state medians. Visual inspection of historical data indicates relatively stable epilimnetic conductivity.
- **E. COLI:** Sayre Inlet E. coli levels were much less than state standard for surface waters.
- **TOTAL PHOSPHORUS:** Epilimnetic and Outlet phosphorus levels were elevated in June likely due to stormwater runoff from significant early summer rainfall and high water levels. Visual inspection of historical data indicates variable epilimnetic phosphorus levels. Metalimnetic phosphorus levels were slightly elevated on each sampling event, and hypolimnetic phosphorus levels were elevated in July and August potentially due to phosphorus release from bottom sediments under anoxic conditions. Sayre Inlet phosphorus was greatly elevated in June and the turbidity was also elevated. Tributary flow was moderate indicating a source of phosphorus and sediment upstream.
- **TRANSPARENCY:** Transparency was low in June due to the algal bloom and improved in July and August as algal growth decreased. Visual inspection of historical data indicatesrelativley stable transparency since monitoring began.
- **TURBIDITY:** Metalimnetic turbidity was slightly above average potentially due to algal growth. Hypolimnetic turbidity was slightly elevated in August potentially due to organic compounds released under anoxic conditions. Sayre Inlet turbidity was elevated in June following significant storm event indicating sources of sediment and/or organic matter upstream.
- **PH:** Hypolimnetic pH levels were lower than the desirable range of 6.5-8.0 units. Visual inspection of historical data indicates variable epilimnetic pH.
- **RECOMMENDED ACTIONS:** Sayre Inlet continues to demonstrate poor water quality with elevated chloride, phosphorus and turbidity. Action should be taken to address pollution sources particularly and implement stormwater best management practices. Stormwater runoff from above average early summer rainfall contributed to high water levels and nutrients to fuel the June algal bloom. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff in the watershed. DES' "Homeowner's Guide to Stormwater Management" is a good resource for lake residents to reduce stormwater runoff from their properties.

Table 1. 2013 Average Water Quality Data for ANGLE POND

Station Name	Alk.	Chlor-a	Chloride	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	#/100ml	ug/l	m		ntu	
							NVS	VS		
Epilimnion	19.7	7.29	38	187.3		12	3.13	3.69	0.57	6.85
Metalimnion				186.3		14			1.20	6.61
Hypolimnion				188.8		20			1.86	6.48
Outlet				190.0		18			0.67	6.83
Sayre Inlet			85		30	172			10.20	6.70

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	N/A	Ten consecutive years of data necessary.	Chlorophyll-a	N/A	Ten consecutive years of data necessary.
Conductivity	N/A	Ten consecutive years of data necessary.	Transparency	N/A	Ten consecutive years of data necessary.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary.